

1 Improvements relating to Water Treatment Apparatus

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3 The present invention relates to a water treatment
4 apparatus programmable pass key.

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6 Water treatment apparatus including for example
7 ultra-pure treatment and filtration apparatus for
8 laboratory, medical, clinical, research and other
9 uses, are becoming increasingly sophisticated. Thus
10 the need to ensure correct operation of such
11 apparatus also requires to keep in step.

12

13 However, operation of such apparatus is still
14 commonly accessible by any user whether trained or
15 untrained. It is increasingly not desired to allow
16 untrained users to carry out any significant
17 resetting or re-operation of water treatment
18 apparatus. This includes such operations as
19 'sanitisation'.

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21 Sanitisation of water treatment apparatus is an
22 important operation, and its incorrect operation,

1 such as conducting the operation too frequently or
2 too infrequently, or whilst other operations are
3 ongoing, can lead to significant damage to the
4 apparatus and/or water product therefrom.

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6 It is an intention of the present invention to
7 obviate these disadvantages.

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9 It is also possible to control water treatment
10 apparatus from more than one access point for either
11 display and/or control, with these access points
12 being in separate or different locations. It is
13 desired to have improved safety levels across the
14 system to reduce the possibility of errors due to
15 overlapping control.

16

17 Thus, according to one aspect of the present
18 invention, there is provided a water treatment
19 apparatus programmable pass key comprising a data
20 carrier programmed with one or more predetermined
21 codes, each code relating to an operation in or of
22 the water treatment apparatus.

23

24 The pass key could have any suitable size, shape or
25 design, including the design and style of other
26 programmable keys such as for tools, cars, computers
27 or other technical equipment. Generally such keys
28 are usable with one hand, and are adapted to be
29 easily storable.

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1 The data carrier may be any form of programmable
2 data carrier known in the art, generally including a
3 computer chip or chips.

4
5 The operation(s) of the water treatment apparatus
6 include all those known in the art, including any
7 type of treatment of water, such as filtration,
8 sanitisation or recirculation, and any type of
9 reprogramming of the water treatment apparatus to
10 provide different flow rates, levels of filtration,
11 etc, as well as servicing operations of the
12 apparatus.

13
14 The term "water treatment apparatus" as used herein
15 includes a complete or stand-alone apparatus, as
16 well as components or parts or fittings of water
17 treatment apparatus, such as individual treatment
18 units or replaceable or consumable parts such as a
19 resin cartridge, as well as multi-site apparatus
20 having more than one user or user-operable
21 interface.

22
23 The latter apparatus can often be in different rooms
24 or even buildings, often leading to complications
25 where different users are using the same apparatus
26 at the same time, but desiring different operations
27 therefrom. The pass key of the present invention
28 ensures that certain operations such as sanitisation
29 can be limited to one or more authorised users.

30
31 Multiple access points may be connected across a
32 network as known in the art, such as via an RS485

1 connection across a Local Area Network (LAN). Each
2 access point may be individually programmed to have
3 access to different operations, display screens or
4 alarms. The access points may be configured to only
5 allow one controller to be used at any time or may
6 indicate the location of any network activity.

7
8 It may further be preferable to limit the location
9 of activation of certain operations, such as
10 sanitisation, to certain control points such as the
11 location of chemical addition or storage.

12
13 The pass key of the present invention is preferably
14 separable from the water treatment apparatus, and so
15 includes an electronic circuit which can co-operate
16 with an electronic circuit in the host water
17 treatment apparatus. The co-operation of the pass
18 key and water treatment apparatus may be one way,
19 either from the pass key to the apparatus or vice-
20 versa, or two way.

21
22 The pass key and the water treatment apparatus can
23 communicate via any form of transmittable waveform,
24 analogue or digital, including optical and magnetic
25 contacts. Preferably these circuits communicate by
26 physical electrical contact for maximum robustness
27 and confirmation of connection, and to minimise
28 interference by other means of communication.
29 Preferably co-operation of the circuits is only
30 possible when the communication is correctly
31 created, and this is only achieved when the pass key

1 is correctly connected, installed and/or fitted with
2 the host water treatment apparatus.

3

4 Such keys are known in the art, for example from
5 Dallas Semiconductor Corp. (Dallas TX, USA). Their
6 key is scanned and the correct type is confirmed
7 before the serial number stored in the non volatile
8 memory is checked prior to allowing access to the
9 functions programmed for that device.

10

11 The pass key preferably includes a memory capacity
12 and an ability to read/interrogate the water
13 treatment apparatus, and/or vice versa.

14

15 The pass key may also include a database having
16 relevant data relating to the water treatment
17 apparatus such as validation information, process
18 information, and/or manufacturing information.
19 Typical information includes, but is not limited to,
20 date of manufacture, date of the or each servicing
21 and/or testing and/or other operation, the user,
22 process parameters and data, quality control
23 details, and possibly a unique reference code.

24

25 Thus, the present invention extends to a water
26 treatment apparatus programmable pass key as herein
27 before defined in combination with a water treatment
28 apparatus adapted to receive and read the pass key.

29

30 The or each code of the pass key may include an
31 enablement signal to the water treatment apparatus
32 which signal may include means for the user to

1 uniquely control one or more different operations of
2 the water treatment apparatus.

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4 The pass key or one or more codes in the pass key
5 may be time-dependent, so as to require renewal or
6 reactivation after a certain time. The certain time
7 could be a predetermined time period wherein the
8 user requires retraining on the water treatment
9 apparatus, or the apparatus requires different
10 operations, and the like.

11

12 Different pass keys could be usable on the same
13 water treatment apparatus, but each pass key could
14 have a different number and/or type of code
15 according to different types of access allowed by
16 types of different users, such as laboratory
17 personnel and service engineers.

18

19 The pass key of the present invention obviates the
20 need for pass words or pin numbers commonly used in
21 the art to gain access through a key board or key
22 pad to technological apparatus, and can ensure that
23 only authorised personnel can adjust key operating
24 parameters, such as alarm conditions, auto-restart,
25 etc.

26

27 The pass key may also allow access to operational
28 data such as hours operated, number of stop/starts,
29 sanitisations and the like.

30

31 The pass key can also instruct that only key
32 personnel, perhaps those who have only had the

1 appropriate training, can initiate activities such
2 as system cleaning and sanitisation. As chemicals
3 or sanitisation agents can be pumped for some
4 distance through the complete network of pipes and
5 outlets for some types of water treatment apparatus,
6 it is an essential safety aspect that only qualified
7 personnel undertake this activity, and in such a way
8 as to avoid conflict with simultaneous operators or
9 users.

10

11 The pass key of the present invention could also
12 ensure that for an operation such as cleaning and/or
13 sanitisation, such a process can only proceed upon
14 presentation of the key. In many present water
15 treatment apparatus, sanitisation is carried out by
16 the manual introduction of relevant chemicals as and
17 when desired, without any ability of the water
18 treatment apparatus to inhibit any user from
19 carrying out the operation when unnecessary.

20

21 The cleaning and/or sanitisation process could
22 include recirculation of the chemicals or sanitants,
23 reduction of reservoirs levels, discharge to drains,
24 rinsing with fresh water, all in an automatic
25 process, such that down time of the apparatus is
26 minimised due to the use of self-draining reservoirs
27 with no hideout areas, deadlegs, etc.

28

29 Where there are more than one display or control
30 stations, the current operation regime can be
31 displayed and in certain circumstances, such as
32 during a sanitisation, local operation or control

1 can be inhibited. Alternatively certain operations
2 may be prevented from initiation by the distant
3 access point.

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5 A further advantage of the present invention is that
6 it can be time coded, such that after a pre-set
7 time, possibly installed during programming of the
8 pass key, it would become inoperable. Thus for
9 instance, this could be a signal that the pass key
10 holder must attend ongoing product training at pre-
11 determined intervals to ensure their knowledge of
12 the product is kept up to date and their skill codes
13 revalidated.

14

15 The present invention extends to a method of
16 operating a water treatment apparatus, wherein one
17 or more operations of the water treatment apparatus
18 are only operable by conjunction of a programmable
19 pass key as herein before defined with the water
20 treatment apparatus, said pass key having a or the
21 code adapted to operate the or each operation.

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